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Mary Jerard, retired accountant of Seattle, Washington: "I am 83 years old. I have had good hearing all of my life. I recently suffered a drastic change in my hearing soon after I parked my car in a grocery store parking lot to wait for a friend. While sitting in the lot, I noticed a cell tower with lots of antennas about 100 feet from my car. My friend forgot to show up, although I waited for over one hour. After that day, I found it difficult to clearly understand what people were saying and my hearing has progressively gotten worse. Later, an acquaintance with an EMF detector showed me that the radiation from that cell tower activates her detector in a very loud way. If cell tower radiation can so radically affect the microwave measuring device, I am wondering what it might have done to my hearing?"



HEARING DAMAGE IN THE MICROWAVE AGE

Among the many pathological symptoms and conditions reported by people living in close proximity to cell tower antennas are negative changes in both eyesight and hearing. In 2013, residents of an apartment complex in Mumbai, India --one of them a famous singer-- made international headlines when they complained to the media that eighteen roof-mounted cell phone antennas above their apartments are the suspected cause of a cancer epidemic among residents of the complex. They also reported constant headaches and nausea, in addition to newly acquired hearing problems. [1]

Several published epidemiological health studies of people living near microwave antenna towers have likewise reported visual disturbances and hearing disruption as common complaints. [2] In 2005, a group of doctors in Bavaria, Germany, conducted a study of 356 people very sick people in several regions who had suffered long-term radiation exposure from nearby cell towers and/or DECT cordless phones. As a result, 175 doctors signed a letter to the prime minister of Bavaria. Known as the Bamberger Appeal, this document states that microwave antennas erected for cellular communications across Germany are creating a widespread public health emergency. [3] Among the numerous health complaints these doctors found among heavily irradiated populations were:

Sudden and abrupt hearing loss

Gradual hearing loss

Bothersome noise within the inner ear (tinnitus)

Some of these sick people also reported dizziness and loss of balance, symptoms of various pathologies and imbalances affecting the inner ear. The elderly, who naturally suffer age-related hearing loss, are likely at highest risk for hearing damage from chronic exposure to nearby environmental RF/microwave transmitters.

As a side note, here is an interesting chronology for Germany:

- ◆ In 2005, many German doctors report widespread sickness from cell tower antennas erected across the land for wireless technologies.
- ◆ In 2006, fifty-five percent of Germans polled admit that their cell phones plus environmental "electrosmog" is "slowly killing them." [4]
- ◆ In 2010, the German media reported that cancer rates in Germany have increased by 90% in men and 40% in women since 1990, an era when Germans began using wireless phones with a vengeance. [5]

Medical science confirms that man-made RF/microwave radiation from cell tower and WLAN (Wi-Fi) antennas flows as electrical and magnetic currents through human flesh [6], subjecting molecules and cells to *abnormal oscillations at millions to billions of times per second*. Unfortunately, these high-frequency signals blasting across our habitat are not usually audible to human beings. Pulsing at millions and billions of hertz, wireless antenna radiation is out of normal hearing range because humans can process sounds only up to about 20,000 hertz. Humans require a RF/microwave detector with audio capabilities which can translate megahertz and gigahertz microwave signals into impressively audible tones. Such equipment allows people to confirm that intense man-made microwave energy now flows non-stop through our environment everywhere, both indoors and out.

Of interest to thoughtful people are unanswered questions about what this continual high-frequency signal bombardment ultimately means to human hearing. As documented at this website, low-level microwave radiation used for wireless communication and entertainment technologies efficiently:

Rips apart the DNA and chromosomes in human cells

Weakens cell membranes, resulting in abnormal cell function

Interrupts and confounds communication processes between cells (inter-cellular functions)

Causes red blood cells to clump, leading to abnormal circulation

Such drastic bio-effects from perpetual microwave irradiation are logically as devastating to the human auditory system as they are to other biological systems in the body. The membranes and DNA of inner ear cells are critical to robust hearing. The human hearing apparatus is exquisitely sensitive to changes in the blood supply. When inner ear cells communicate with other cells, they depend on proper calcium balance to get the job done. But nothing more effectively causes abnormal calcium efflux (calcium loss) in living cells than modulated microwaves.



Most people are shocked when an audio microwave detector reveals the noise and power of microwave energy hissing from a cell phone or a bluetooth device pressed to the skull directly over the ear canal. This energy, capable of propagating data and voice signals for miles, penetrates the ear just as deeply as it does the eye and the brain. Research conducted at the Memorial Sloan-Kettering Cancer Center demonstrated that mobile phone devices held to the head produce random thermal spikes *which can literally burn brain tissues*. [7] Could not those same radiation heat spikes, bursting through the ear canal, impact inner ear mechanisms, including the ultra-sensitive "hair" cells vital to normal hearing?

Microwave radiation is a confirmed cause of acoustic neuroma, a type of tumor which forms on the nerve leading to the brain. Using microwave devices on the ear for several years at least doubles the risk for acoustic neuroma.[8] Cell phones, cordless phones, wireless headsets and bluetooth devices are all indicted in the risk statistics for this type of tumor, a common cause of deafness.

Yet, adequate research on critical audiological issues related to wireless technology has not been undertaken in the United States since the wireless revolution began. As confirmed by the Federal Communications Commission (FCC), most of the scant wireless bio-research conducted in the United States is undertaken by the wireless radiation industry itself. [9] This situation is akin to tobacco companies having sole responsibility to research the health effects of cigarettes. This situation is why most of the American people have virtually none of the crucial information presented at this website.

The Food and Drug Administration (FDA) has neither manpower nor political will to scientifically review the safety of radiation-emitting consumer products. The FDA has never issued health and safety warnings based on the latest medical science related to wireless technologies. Therefore, no wireless device on the market has ever been US government certified for hearing safety. Information about unsafe levels of cell phone radiation permitted by US "regulators" is provided by Louis Slesin, editor of *Microwave News*: *"Not long ago, a well known microwave researcher pointed out that when you put a cell phone next to your ear, the radiation exposure will often exceed the current safety standard. That is, the ear gets overexposed. Keep in mind that the standard is not particularly strict, indeed it was written by the military and the cell phone industry. What happened next? The standards committee exempted the ear. Suddenly, the ear was not very important. It was a piece of cartilage that could withstand 10-20 times more radiation. I am not aware of a single medical doctor who was consulted during the process of relaxing the standard, but I do know that the change sailed through. This is the way the system works."* [10]



Therefore, Americans who wish to protect their hearing in the Microwave Age must rely on scientific evidence offered by independent researchers working in other nations. As the science continues to mature, the puzzle pieces needed for a clear picture are slowly becoming available.

◆ In 2005, a Spanish medical study conducted at the University of Valencia reported hearing loss among 323 healthy volunteers who were followed during three years of cell phone use. [11]

◆ In 2006, a study published by the Department of Otolaryngology at the Medical School of Dicle University in Turkey concluded: *"This study shows that a higher degree of hearing loss is associated with long-term exposure to electromagnetic (EM) fields generated by cellular phones."* [12]

◆ In 2007, medical research presented by the American Academy of Otolaryngology found that microwave phone radiation incrementally damages the inner ear, causing high frequency hearing loss. This study, conducted by a research institute in New

Delhi, India, followed 100 people who used mobile phones for over one year and who incrementally suffered hearing loss as a result. Researchers found that those who kept a microwave-emitting device on their ear for an hour a day or more, sustained the most inner ear damage. [13]

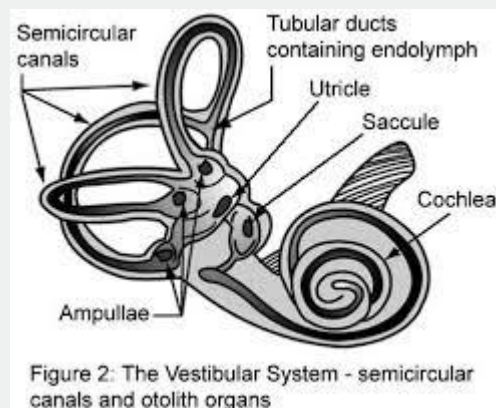
◆ In 2010, doctors in India reported a 50% hearing loss among some cell phone users in a case-controlled study which compared the hearing of 112 cell phone users compared to 50 controls who had never used a mobile phone. Employing a battery of audiological investigations, the study concluded: **"High frequency loss and absent distortion product otoacoustic emissions were observed with an increase in the duration of mobile phone use, excessive use of mobile phones, and age more than 30. Additionally, users with some complaints during mobile phone use demonstrated...abnormalities in auditory brainstem response. Long-term and intensive mobile phone use may cause inner ear damage."** [14]

◆ In 2011, a follow-up case-control study on a different group of subjects by the same Indian research group again found numerous audiological problems in cell phone users compared to the control group. The study reported: **"More than three years of mobile phone usage emerged as a risk factor. The damage done was bilateral, with the quantum of damage being the same for both GSM and CDMA [modulation technologies]."** The report concludes: **"Long-term and intensive GSM and CDMA mobile phone use may cause damage to the cochlea as well as the auditory cortex."** [15]

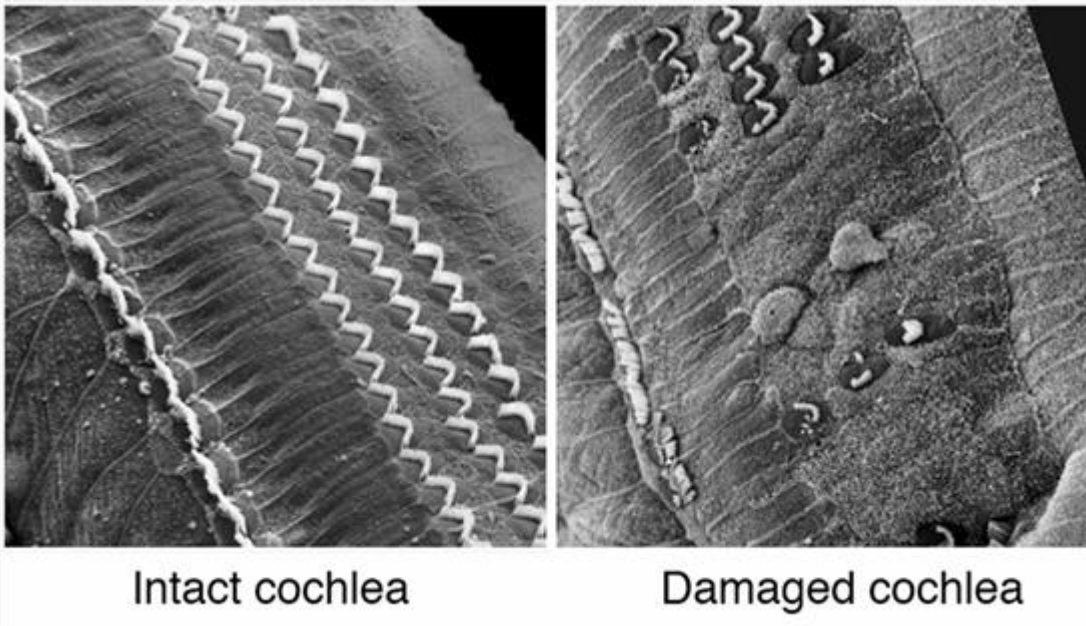
◆ In 2013, researchers with the Department of Otolaryngology at King Saud University in Saudi Arabia published a study which concluded that test subjects who used a 3G mobile phone for sixty minutes at a time [a fraction of the time many American children and teens spend on wireless phones] suffered an immediate effect on their hearing threshold levels and other negative otological symptoms. [16]

◆ In 2013, an epidemiological study published in *Electromagnetic Biology and Medicine* tabulated data from a medical questionnaire given to 350 Turkish cell phone users. Many reported hearing loss and tinnitus along with headaches and vertigo/dizziness related to their wireless exposure. [17]

◆ In 2014, scientists exposed mice to radiofrequency signals administered at a specific absorption rate (SAR) typical of cell phone power density (1.6W/kg). Irradiated mice suffered a significant decrease in two vital auditory chemicals needed to maintain hearing health. These chemicals are BDNF (brain-derived neurotrophic factor) and GDNF (glial-derived neurotrophic factor). BDNF and GDNF are crucial for protection against acoustic trauma and they help prevent hearing defects. The conclusion of this study was a **"detrimental effect of RF exposure in the auditory nuclei."** [18]



Microwave damage to the human cochlea, as discussed in the radiation studies cited above, is bad news. The majority of people with hearing loss have suffered some degree of damage to the cochlea, which is an inner ear structure. Below are pictures under magnification from the House Ear Institute showing the miraculous and fragile "hair" cells lining the cochlea. These fantastic little microprocessors have everything to do with either hearing well-- or going deaf. They are organized into three rows of outer hair cells, and one row of inner hair cells. Inner hair cells send auditory information to the brain, while outer hair cells act to stabilize or intensify the vibrations transmitted throughout the cochlea.



Intact cochlea

Damaged cochlea

The most common type of hearing loss related to hair cell die-off is known as sensorineural deafness and is characterized initially by high-frequency hearing loss, affecting the ability to hear and understand speech, especially the consonants s, f, t and z. *The loss of hair cells is irreversible* and results in permanent degrees of deafness. Loud noises are thought to over-stimulate the hair cells, leading to over-production of cell-damaging chemicals called free radicals. Might the frenetically vibratory radiation from cell tower antennas, Wi-Fi signal generators and wireless phones be commensurate with excessive “noise” to the ear cells? The science is beginning to confirm that the answer is YES.

Information from Wikipedia confirms that even at very low, non-thermal power densities, microwaves can cause abnormal over-heating and expansion of parts of the human ear in and around the cochlea: *“The microwave auditory effect, also known as the microwave hearing effect or the Frey effect, consists of audible clicks induced by pulsed/modulated microwave frequencies. The clicks are generated directly inside the human head without the need of any receiving electronic device.... During the Cold War era, the American neuroscientist Alan Frey studied this phenomenon and was the first to publish...information on the nature of the microwave auditory effect; this effect is therefore also known as the Frey Effect.”* [19]

And there is more: *“Research by NASA in the 1970s showed that this effect occurs as a result of thermal expansion of parts of the human ear around the cochlea, even at low power density. Later, signal modulation was found to produce sounds or words that appeared to originate intracranially. It was studied for its possible use in communications, but has not been developed due to the possible hazardous biological effects of microwave radiation.”* [20]

Tinnitus, which manifests as persistent ringing, roaring, hissing or clicking in the ear, is a basic hallmark of microwave radiation exposure. It is also a recognized symptom of inner ear damage and one of the first signs of hearing loss. Tinnitus often results from hair cell die-off after something causes damage to the auditory system. Prolonged mobile phone use is definitively linked to tinnitus by a case control study published in 2010 in the journal *Occupational and Environmental Medicine*. The study found that regular use of a mobile phone is associated with double the risk of developing chronic tinnitus. Researchers who conducted the study *“suggest there is a plausible explanation for a potential link between mobile phones and tinnitus as the cochlea and the auditory pathway absorb a considerable amount of energy emitted by a mobile.”* [21] An estimated two million Americans are so seriously disturbed by tinnitus that they literally cannot function on a day-to-day basis. [22] This degree of unrelenting and overwhelming tinnitus can lead to severe depression as well as thoughts of, or consummation of suicide.

American babies and children have long been encouraged by their culture to begin wireless phone use at a very early age. By 2010, a study project conducted at Brigham and Women's Hospital in Boston and published in the *Journal of the American Medical Association*, reported that one in five US adolescents now suffers some level of hearing impairment. It also found that *31 percent more of today's microwave-addicted teenagers have some level of hearing loss compared to their peers of the late 80s and early 90s when wireless exposure was not an issue.* Dr. Lawrence Lustig, director of otology and neurotology at the University of California San Francisco, noted that national statistics on hearing impaired youngsters reveal a *“huge jump in hearing loss.”* [23]

There have lately been numerous media reports about many young Americans suffering tinnitus and other symptoms of serious hearing damage from their media players. In addition to cell phones, media devices such as iPods and MP3 players have Wi-Fi capabilities and therefore generate powerful and pulsed microwave signals. Unless the Wi-Fi component is disabled, these

addictive wireless devices can emit continuous spikes of radiation into the ear. This radiation easily travels through the unshielded ear wires and headphones commonly used for hands-free application. Could the combination of continuous too-loud music along with pulsed microwave signals be a root cause of the hearing damage now epidemic among America's young?



The medical studies cited above indicate that many unwary young Americans are bound to suffer early and irreversible hearing damage from their unsafe use of wireless technologies. The millions of tweens and teens, who spend hours on wireless phones and gaming/music headsets each day, can kiss normal, youthful hearing goodbye. Armies of these young digital zombies, always plugged in for their daily "dose" of radiation, are destined to join in waves (pun intended) the thirty-eight million Americans who already suffer serious hearing disabilities.

An additional tragedy concerns the unknown sensory effects which the ubiquitous microwave assault is likely inflicting upon fetuses and infants caught in the Wireless Age. Even as sperm and ova, children born today are continuously subjected to powerful torrents of wireless radiation from numerous sources. It may be a long time before medical science understands the full extent of the damage to hearing and brain function being suffered by these vulnerable populations, forced to swim in a sea of carcinogenic wave radiation long before their auditory systems are fully developed. What we do know is that microwave radiation, with its affinity for water, easily travels through the amniotic fluids of the uterus. [24] And we know that this radiation is a gross teratogen (causes birth defects) by virtue of its ability to destroy DNA and alter genes. [25]



Each year, over 12,000 babies are born in USA with hearing impairment. Over three million American children, nearly half of them under three, are coping with some degree of hearing loss. Tens of thousands of American school children require speech-language pathology services and special education to compensate for their hearing disabilities. [26]



In 2009, a study published by the Nanomedicine Research Laboratory in Ankara, Turkey, showed that microwave radiation has a devastating effect on the hearing function of baby rabbits. Two groups of rabbits, punished with GSM cell phone radiation (1.8 gigahertz) during the first 14 days of their lives, suffered a **“significant increase in hearing impairment when compared to both the control group and the group exposed only before birth.”** [27] This study is fair warning about microwave-saturated hospitals, homes and day care centers which abuse infants and toddlers with ultra-destructive megahertz and gigahertz radiation emanating from numerous Wi-transmitters. If only from an audiological standpoint, microwave-based technologies including: hospital IT and security systems, wireless baby monitors, DECT phone systems, household Wi-Fi networks and personal Wi-devices are NOT child-friendly.

For those who wish to AVOID further microwave ear damage for young and old, good advice from the latest science is to keep all wireless devices off the body and to keep living and working spaces free of RF/microwave radiation. People who attempt to mitigate brain and ear damage with a wired headset plugged into a wireless device should know that unshielded wires, and even some air tube headsets, transmit plenty of information-carrying radio waves into the inner ear. In addition, wired headsets cause device users to hold a microwave transceiver right next to the body, thereby blasting wave carcinogen into the gut and reproductive organs. The least deadly alternative is to use--only minimally--speaker phones widely separated from the body.

Meantime, prudent US money managers should invest heavily in hearing aid technology and medical intervention for deafness and numerous other auditory pathologies. *Hearing impairment in Wi-America is a growth industry with momentum.* A new medical study, published in 2015, yields yet more evidence. In order to study the effects of mobile phone radiation on auditory neurons, a team of scientists exposed rats to electromagnetic radiation for only 30 days. The rats suffered severe degeneration of their auditory systems, including: edema (tissue swelling), the development of cochlear vacuoles (abnormal holes) and pyknosis (degeneration and shrinking of cells) in the cochlear nucleus. [28]

To the millions of Americans who endlessly gratify themselves by pumping a multitude of pulsed microwave frequencies directly into their brains and ear canals, all we can say is:

GOOD LUCK, SUCKERS!

Reference Notes with Additional Information

Please construe nothing at this website as medical advice.